**Claims:**

1. A method for performing an Inverse Discrete Wavelet Transform (IDWT) comprising, for a first sub-band level and a second sub-band level in an N level Discrete Wavelet Transform, the steps of:

(i) inverse transforming, using filters having associated filter widths, data from associated sub-bands in the first sub-band level, to form processed data in a corresponding sub-band in the second sub-band level; and

(ii) inverse transforming, using second filters having the same corresponding associated filter widths, the processed data in conjunction with corresponding data from associated sub-bands in the second sub-band level; wherein steps (i) and (ii) are performed in a pipeline manner.

2. A method according to claim 1, whereby said filters are used in relation to level N, and said second filters are time shared by all other N-1 pairs of consecutive levels N-1 and N-2, ..., 1 and 0, the second filters being substantially applied to only a single pair of levels at a given time

3. A method according to claim 2, whereby time sharing is performed using a time multiplexer which multiplexes data from pairs of levels to the second filters.

4. A method according to claim 2, where data associated with a pair of sub-band levels associated with the second filters, is stored while the second filters are being applied to another pair of sub-band levels.

5. A method according to any one of claims 1 to 4 wherein said filters and said second filters are N dimensional separable IDWT transformers.

6. A method for performing an IDWT in relation to an N level Discrete Wavelet Transform, said method comprising steps of:

(i) applying a first set of M x M filters to data from associated sub-bands in a first sub-band level, thereby to form M x M processed data points in a corresponding sub-band in a second sub-band level;

(ii) applying, in a pipeline manner in respect to N-1 succeeding sub-band levels, N-1 corresponding sets of M x M filters, each corresponding set being applied to M x M processed data points from a preceding level in conjunction with corresponding data from associated sub-bands in the succeeding sub-band level; thereby to form, in a pipeline manner, a set of M x M output data points.

7. An apparatus adapted for performing an Inverse Discrete Wavelet Transform (IDWT) comprising, for a first sub-band level and a second sub-band level in an N level Discrete Wavelet Transform:

filters having associated filter widths, for inverse transforming data from associated sub-bands in the first sub-band level thereby to form processed data in a corresponding sub-band in the second sub-band level; and

second filters having the same corresponding associated filter widths, for inverse transforming the processed data in conjunction with corresponding data from associated sub-bands in the second sub-band level; wherein the filters and the second filters are arranged in a pipeline manner.

8. An apparatus method according to claim 7, wherein said filters are used in relation to level N, and said second filters are time shared by all other N-1 pairs of consecutive levels N-1 and N-2, ..., 1 and 0, the second filters being substantially applied to only a single pair of levels at a given time.

9. An apparatus according to claim 8, further comprising:

a time multiplexer which multiplexes data from pairs of levels to the second filters to perform the time sharing.

10. An apparatus according to claim 8, further comprising:

storage means for storing data associated with a pair of sub-band levels associated with the second filters while the second filters are being applied to another pair of sub-band levels.

11. An apparatus according to any one of claims 7 to 10 wherein said filters and said second filters are N dimensional separable IDWT transformers,

12 An apparatus adapted for performing an IDWT in relation to an N level Discrete Wavelet Transform, said apparatus comprising:

a first set of M x M filters for applying to data from associated sub-bands in a first sub-band level, thereby to form M x M processed data points in a corresponding sub-band in a second sub-band level;

N-1 corresponding sets of M x M filters, for applying, in a pipeline manner in respect to N-1 succeeding sub-band levels, each corresponding set being applied to M x M processed data points from a preceding level in conjunction with corresponding data

from associated sub-bands in the succeeding sub-band level; thereby to form, in a pipeline manner, a set of M x M output data points.

13. A computer readable memory medium for storing a program for apparatus which performs an Inverse Discrete Wavelet Transform (IDWT), said program comprising, for a first sub-band level and a second sub-band level in an N level Discrete Wavelet Transform:

code for a first inverse transforming step for inverse transforming, using filters having associated filter widths, data from associated sub-bands in the first sub-band level, to form processed data in a corresponding sub-band in the second sub-band level; and

code for a second inverse transforming step for inverse transforming, using second filters having the same corresponding associated filter widths, the processed data in conjunction with corresponding data from associated sub-bands in the second sub-band level; wherein the code for the first inverse transforming step and the code for the second inverse transforming step are executed in a pipeline manner.

14. A computer readable memory medium for storing a program for apparatus which performs an IDWT, said program comprising:

(i) first code for an applying step, for applying a first set of M x M filters to data from associated sub-bands in a first sub-band level, thereby to form M x M processed data points in a corresponding sub-band in a second sub-band level;

(ii) second code for an applying step, for applying, in a pipeline manner in respect to N-1 succeeding sub-band levels, N-1 corresponding sets of M x M filters, each corresponding set being applied to M x M processed data points from a preceding level in

conjunction with corresponding data from associated sub-bands in the succeeding sub-band level; thereby to form, in a pipeline manner, a set of M x M output data points.

15 A method for performing an IDWT in relation to an N level Discrete Wavelet Transform, said method comprising, for first sets of data points from associated sub-bands of a first sub-band level, and a second set of data points from a second sub-band level, said first set and said second set of data points each having first data dimensions, steps of:

(i) inverse transforming, using a first computational block having said first data dimensions, said first sets of data points to form a set of processed data points in a corresponding sub-band in the second sub-band level, said set of processed data points having said first data dimensions; and

(ii) inverse transforming, using a second computational block having said first data dimensions, the set of processed data points in conjunction with a corresponding set of data points from associated sub-bands in the second sub-band level; wherein steps (i) and (ii) are performed in a pipeline manner thereby to form a set of output data points having said first data dimensions.

16. An apparatus for performing an IDWT in relation to an N level DWT, said apparatus comprising, in respect to a current sub-band level and a subsequent sub-band level;

a first plurality of parallel convolvers each having a plurality of output data channels, and each said parallel convolver receiving data from a corresponding subband at said current sub-band level;

a second plurality of serial convolvers each receiving data from corresponding ones of said output data channels and producing data for a low-low frequency sub-band of the subsequent sub-band level.

17. A method for performing an IDWT in relation to an N level DWT, said method comprising, in respect to a current sub-band level and a subsequent sub-band level, steps of:

providing data from corresponding subbands at said current sub-band level to a first plurality of parallel convolvers, each said parallel convolver having a plurality of output data channels;

providing data from corresponding ones of said output data channels to a second plurality of serial convolvers, each said second plurality of serial convolvers producing data for a low-low frequency sub-band of the subsequent sub-band level.